from the shore 54°·6, while the water of the burn flowing into the loch had a temperature of 53°·6, and higher up the stream 53°·1. It thus appears that the waters of Loch Voil were warmer than those of Loch Earn, and in the case of Loch Voil the stream feeding the loch had a lower temperature than the loch itself, while in the case of Loch Earn the streams were warmer than the waters of the loch.

Loch Lubnaig.—Observations were taken in Loch Lubnaig only on April 6 and 8, 1899, and showed that at that time the temperature of the water was nearly uniform from surface to bottom, the range being only from 41°·8 to 42°·7.

From the point of view of temperature, the Scottish fresh-water lochs may be divided into those which freeze during hard winters, and those which never freeze. Those which freeze over in winter are shallow lochs, and when frozen the water-temperature beneath the ice is at the maximum density point of fresh water (39°·1) or lower. In spring the temperature of these shallow lochs rises much more quickly through the heat of the sun, and the whole mass of water attains a higher temperature than in the case of the deeper lochs; they also lose their heat much more quickly in the autumn than the deep lochs, and consequently have a much wider range of annual temperature. In the deep lochs—those with 400 or more feet of depth—the temperature of the water never rises so high in summer, nor sinks so low in winter, as in the shallow lochs, and the range is much less. The temperature of the bottom water in some cases does not change more than 1° Fahr. from year to year, and in the deepest lochs it appears to be practically constant at all times and seasons; 40° is the lowest temperature that has been recorded at the bottom in any of these deep Scottish lochs, so that the maximum density point is never reached. In summer, autumn, and even early winter, it is possible, by observing the temperature of the surface and sub-surface waters, to form a fairly accurate idea of the depth of a loch, the temperature being higher the shallower the loch. The waters from a deep loch—like Loch Katrine—are much the best for the water-supply to a city, for in summer the temperature is relatively low and in winter it is relatively high.

The serial temperature observations taken in Lochs Chon, Ard, Menteith, and Leven are given in the following table, but many temperature observations were taken at the surface, which are not, of course, included in the table:—